

WHAT IS CLAIMED IS:

1. A photographic element comprising a transparent polymer sheet, at least one layer containing negative working photosensitive silver halide and at least one upper protective shield to protect the surface of said transparent polymer.
2. The photographic element of Claim 1 wherein said upper shield layer protects said transparent polymer from fingerprints.
3. The photographic element of Claim 2 wherein said upper shield layer has a roughness of between 0.01 and 0.06 micrometers at a spatial frequency of between 0.03 and 6.35 millimeters.
4. The photographic element of Claim 2 wherein said upper shield comprises film-forming polymeric binder, lubricants, matte filler particles, or beads.
5. The photographic element of Claim 2 wherein said upper shield layer comprises silica, methacrylate bead, polyurethane, polyester, acrylic, vinyl, polycarbonates, acrylate latexes and copolymer derivatives thereof, carnauba wax, and/or fluoro-containing materials.
6. The photographic element of Claim 1 wherein said upper shield layer protects said transparent polymer sheet from scratches.
7. The photographic element of Claim 6 wherein said upper shield layer comprises lubricants, film-forming polymeric binder and filler particles wherein said lubricant may be selected from the group consisting of silicates, silicone based materials, fatty acids, fatty acid derivatives, alcohols, alcohol derivatives, fatty acid esters, fatty acid amides, polyhydric alcohol esters of fatty acids, paraffin, carnauba wax, natural waxes, synthetic waxes, petroleum waxes,

mineral waxes, and fluoro-containing materials wherein said film forming binder may be selected from the group consisting of polyurethanes, cellulose acetates, poly(methyl methacrylate), polyesters, polyamides, polycarbonates, polyvinyl acetate, proteins, protein derivatives, cellulose derivatives, polysaccharides, poly(vinyl lactams), acrylamide polymers, poly(vinyl alcohol), derivatives of poly(vinyl alcohol), hydrolyzed polyvinyl acetates, polymers of methacrylates, polymers of alkyl acrylates, polymers of sulfoalkyl acrylates, polyamides, polyvinyl pyridine, acrylic acid polymers, maleic anhydride copolymers, polyalkylene oxide, methacrylamide copolymers, polyvinyl oxazolidinones, maleic acid copolymers, vinyl amine copolymers, methacrylic acid copolymers, acryloyloxyalkyl sulfonic acid copolymers, vinyl imidazole copolymers, vinyl sulfide copolymers, homopolymer containing styrene sulfonic acid, copolymers containing styrene sulfonic acid, gelatin and combination thereof wherein said filler particles may be selected from the group consisting of matte beads, silica, glass beads, pigments, and polymeric beads.

8. The photographic element of Claim 6 wherein said upper shield layer comprises wax esters of high fatty acids, silicates, carnauba wax, fluoro-containing materials, silica, polymeric beads, polyurethanes, polycarbonates, and/or gelatin.

9. The photographic element of Claim 1 wherein said upper shield layer protects said transparent polymer sheet from electrostatic charge accumulation.

10. The photographic element of Claim 8 wherein said upper shield layer comprises electrostatic charge control materials selected from the group consisting of conductive particles including doped-metal oxides, metal oxides containing oxygen deficiencies, metal antimonates, conductive nitrides,

carbides, or borides, for example, TiO_2 , SnO_2 , Al_2O_3 , ZrO_3 , In_2O_3 , MgO , $ZnSb_2O_6$, $InSbO_4$, TiB_2 , ZrB_2 , NbB_2 , TaB_2 , CrB_2 , MoB , WB , LaB_6 , ZrN , TiN , TiC , and WC .

11. The photographic element of Claim 9 wherein said upper shield layer comprises electrostatic charge control materials selected from the group consisting of tin oxide and vanadium pentoxide

12. The photographic element of Claim 9 wherein said upper shield layer has a surface resistivity of less than 10^{13} ohms per square.

13. The photographic element of Claim 6 wherein said element has scratch resistance of greater than 3 grams.

14. The photographic element of Claim 1 wherein said element further comprises an antihalation layer.

15. The photographic element of Claim 14 wherein said antihalation layer is above said transparent polymer sheet.

16. The photographic element of Claim 14 wherein said antihalation layer is below said transparent polymer sheet.

17. The photographic element of Claim 1 wherein said upper shield comprises more than one functional layer.

18. The photographic element of Claim 1 wherein said transparent polymer sheet comprises oriented polyolefin polymer.

19. The photographic element of Claim 1 wherein said transparent polymer sheet comprises oriented polyester polymer.

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20. The photographic element of Claim 1 wherein said transparent polymer sheet has a thickness between 6 and 100 micrometers.

21. The photographic element of Claim 1 further comprising an adhesion promoting layer between said transparent polymer sheet and said at least one layer containing silver halide.

Sub B 1
22. A photographic element comprising a transparent polymer sheet, at least one layer containing an image formed by development of negative working photosensitive silver halide and at least one upper protective shield to protect the surface of said transparent polymer, and adhesively adhered thereto a base material.

Sub C2
23. The photographic element of Claim 22 wherein said upper shield layer protects said transparent polymer from fingerprints.

Sub A
24. The photographic element of Claim 23 wherein said upper shield layer comprises lubricants, film-forming polymeric binder and filler particles wherein said lubricant may be selected from the group consisting of silicates, silicone based materials, fatty acids, fatty acid derivatives, alcohols, alcohol derivatives, fatty acid esters, fatty acid amides, polyhydric alcohol esters of fatty acids, paraffin, carnauba wax, natural waxes, synthetic waxes, petroleum waxes, mineral waxes, and fluoro-containing materials wherein said film forming binder may be selected from the group consisting of polyurethanes, cellulose acetates, poly(methyl methacrylate), polyesters, polyamides, polycarbonates, polyvinyl acetate, proteins, protein derivatives, cellulose derivatives, polysaccharides, poly(vinyl lactams), acrylamide polymers, poly(vinyl alcohol), derivatives of poly(vinyl alcohol), hydrolyzed polyvinyl acetates, polymers of methacrylates, polymers of alkyl acrylates, polymers of sulfoalkyl acrylates,

polyamides, polyvinyl pyridine, acrylic acid polymers, maleic anhydride copolymers, polyalkylene oxide, methacrylamide copolymers, polyvinyl oxazolidinones, maleic acid copolymers, vinyl amine copolymers, methacrylic acid copolymers, acryloyloxyalkyl sulfonic acid copolymers, vinyl imidazole copolymers, vinyl sulfide copolymers, homopolymer containing styrene sulfonic acid, copolymers containing styrene sulfonic acid, gelatin and combination thereof wherein said filler particles may be selected from the group consisting of matte beads, silica, glass beads, pigments, and polymeric beads.

25. The photographic element of Claim 23 wherein upper shield layer comprises wax esters of high fatty acids, silicates, carnauba wax, fluoro-containing materials, silica, polymeric beads, polyurethanes, polycarbonates and/or gelatin.

26. The photographic element of Claim 22 wherein said upper shield layer protects said transparent polymer sheet from scratches.

27. The photographic element of Claim 26 wherein said upper shield layer comprises lubricants, film-forming polymeric binder and filler particles wherein said lubricant may be selected from the group consisting of silicates, silicone based materials, fatty acids, fatty acid derivatives, alcohols, alcohol derivatives, fatty acid esters, fatty acid amides, polyhydric alcohol esters of fatty acids, paraffin, carnauba wax, natural waxes, synthetic waxes, petroleum waxes, mineral waxes, and fluoro-containing materials wherein said film forming binder may be selected from the group consisting of polyurethanes, cellulose acetates, poly(methyl methacrylate), polyesters, polyamides, polycarbonates, polyvinyl acetate, proteins, protein derivatives, cellulose derivatives, polysaccharides, poly(vinyl lactams), acrylamide polymers, poly(vinyl alcohol), derivatives of poly(vinyl alcohol), hydrolyzed polyvinyl acetates, polymers of methacrylates, polymers of alkyl acrylates, polymers of sulfoalkyl acrylates,

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polyamides, polyvinyl pyridine, acrylic acid polymers, maleic anhydride copolymers, polyalkylene oxide, methacrylamide copolymers, polyvinyl oxazolidinones, maleic acid copolymers, vinyl amine copolymers, methacrylic acid copolymers, acryloyloxyalkyl sulfonic acid copolymers, vinyl imidazole copolymers, vinyl sulfide copolymers, homopolymer containing styrene sulfonic acid, copolymers containing styrene sulfonic acid, gelatin and combination thereof wherein said filler particles may be selected from the group consisting of matte beads, silica, glass beads, pigments, and polymeric beads.

28. The photographic element of Claim 26 wherein said upper shield layer comprises wax esters of high fatty acids, silicates, carnauba wax, fluoro-containing materials, silica, polymeric beads, polyurethanes, polycarbonates, and/or gelatin.

29. The photographic element of Claim 22 wherein said upper shield layer protects said transparent polymer sheet from electrostatic charge accumulation.

30. The photographic element of Claim 29 wherein said upper shield layer comprises electrostatic charge control materials selected from the group consisting of conductive particles including doped-metal oxides, metal oxides containing oxygen deficiencies, metal antimonates, conductive nitrides, carbides, or borides, for example, TiO_2 , SnO_2 , Al_2O_3 , ZrO_3 , In_2O_3 , MgO , $ZnSb_2O_6$, $InSbO_4$, TiB_2 , ZrB_2 , NbB_2 , TaB_2 , CrB_2 , MoB , WB , LaB_6 , ZrN , TiN , TiC , and WC .

31. The photographic element of Claim 29 wherein said upper shield layer comprises electrostatic charge control materials selected from the group consisting of tin oxide and vanadium pentoxide.

32. The photographic element of Claim 29 wherein said upper shield layer has a surface resistivity of less than 10^{13} ohms per square.

33. The photographic element of Claim 26 wherein said element has scratch resistance of greater than 3 grams.

34. The photographic element of Claim 22 wherein said upper shield comprises more than one functional layer.

35. The photographic element of Claim 22 wherein said transparent polymer sheet comprises oriented polyolefin polymer.

36. The photographic element of Claim 22 wherein said transparent polymer sheet comprises oriented polyester polymer.

37. The photographic element of Claim 22 wherein said transparent polymer sheet has a thickness between 6 and 100 micrometers.

38. The photographic element of Claim 22 wherein said base is substantially opaque and has a transmission of less than 15 percent.

39. The photographic element of Claim 22 wherein said base is white and reflective and comprises an upper surface whiteness of at least an L^* of 93.5 and a b^* of less than 2.0.

40. A method of forming a two-sided image member comprising providing a photographic element comprising a transparent polymer sheet, at least one layer containing negative working photosensitive silver halide and at least one upper protective shield to protect the surface of said transparent polymer wherein said photosensitive silver halide is exposed with a collimated beam of actinic

radiation to form a plurality of images, developing said images, folding said images inwardly and adhesively adhering said two-sided imaging member to a base, punching said member along at least one side.

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41. A method of forming a two-sided image member comprising providing an imaging element comprising a transparent polymer sheet, at least one layer containing image receiving layer and at least one upper protective shield to protect the surface of said transparent polymer wherein said image receiving layer forms a plurality of images, folding said images inwardly and adhesively adhering said two-sided imaging member to a base, punching said member along at least one side.

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